



2006

**Water Quality Assessment
and
Impaired Waters
Integrated Report**

Virginia Department of Environmental Quality

September 2006



Public Comment

- Public comment period July 10 - August 11
- Download Integrated Report via DEQ website
 - <http://www.deq.virginia.gov/wqa/>
 - Maps available at <http://www.gisweb.deq.virginia.gov/>
- 7 public meetings held around Virginia
- Comments received by first class mail to:
 - Darryl M. Glover, DEQ Water Quality Monitoring and Assessment Manager, P.O. Box 1105, Richmond, Virginia 23218-1105
- and via e-mail attachment to dmglover@deq.virginia.gov

Background

- Clean Water Act and the Virginia Water Quality Monitoring, Information and Restoration Act require state to assess and report on the quality of state waters.
- 2002 - published separate 305(b) Water Quality Assessment report and 303(d) Report on Impaired Waters
- 2003 - EPA promoted an integrated (combined) report
- 2004 - Virginia publishes its first Integrated Report
- 2006 - First assessment of new Chesapeake Bay WQS

Key Factors For 2006 Assessment

- Assessment Period: January 2000 - December 2004
- Data from over 5000 stations used
- Enhanced use of Citizen and Non-Agency data
- Updated Trend Analysis
- VDH Fishing Advisories:
 - Mercury and PCB thresholds lowered
 - 12 Mercury; 39 PCBs; 1 Kepone
- VDH data on public beaches
- Shifting to Small (6th Order-12 Digit) Watersheds
- First assessment of Chesapeake Bay WQS - D.O., SAV
 - 600 assessment units are now combined into 36 segments for D.O.

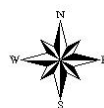
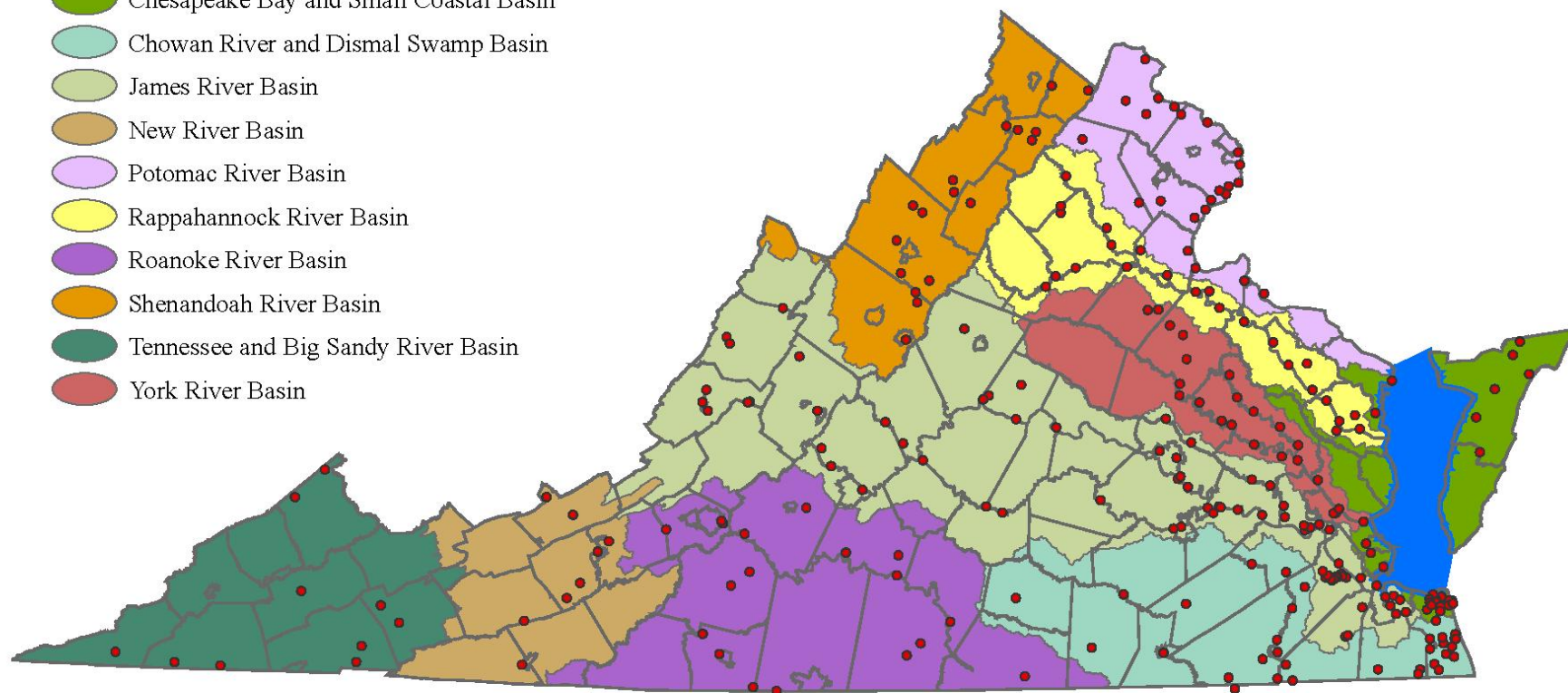
Use of Citizen Monitoring Data

- 447 Citizen monitoring stations met the highest level of Quality Assurance
- In future assessments, will assess more citizen monitored sites independently
- By the 2010 assessment, DEQ will assess 3,000 stream miles using citizen data

Distribution of 2006 Trend Analysis Stations

Virginia River Basins

- Chesapeake Bay and Small Coastal Basin
- Chowan River and Dismal Swamp Basin
- James River Basin
- New River Basin
- Potomac River Basin
- Rappahannock River Basin
- Roanoke River Basin
- Shenandoah River Basin
- Tennessee and Big Sandy River Basin
- York River Basin



0 12.5 25 50 75 100 Miles



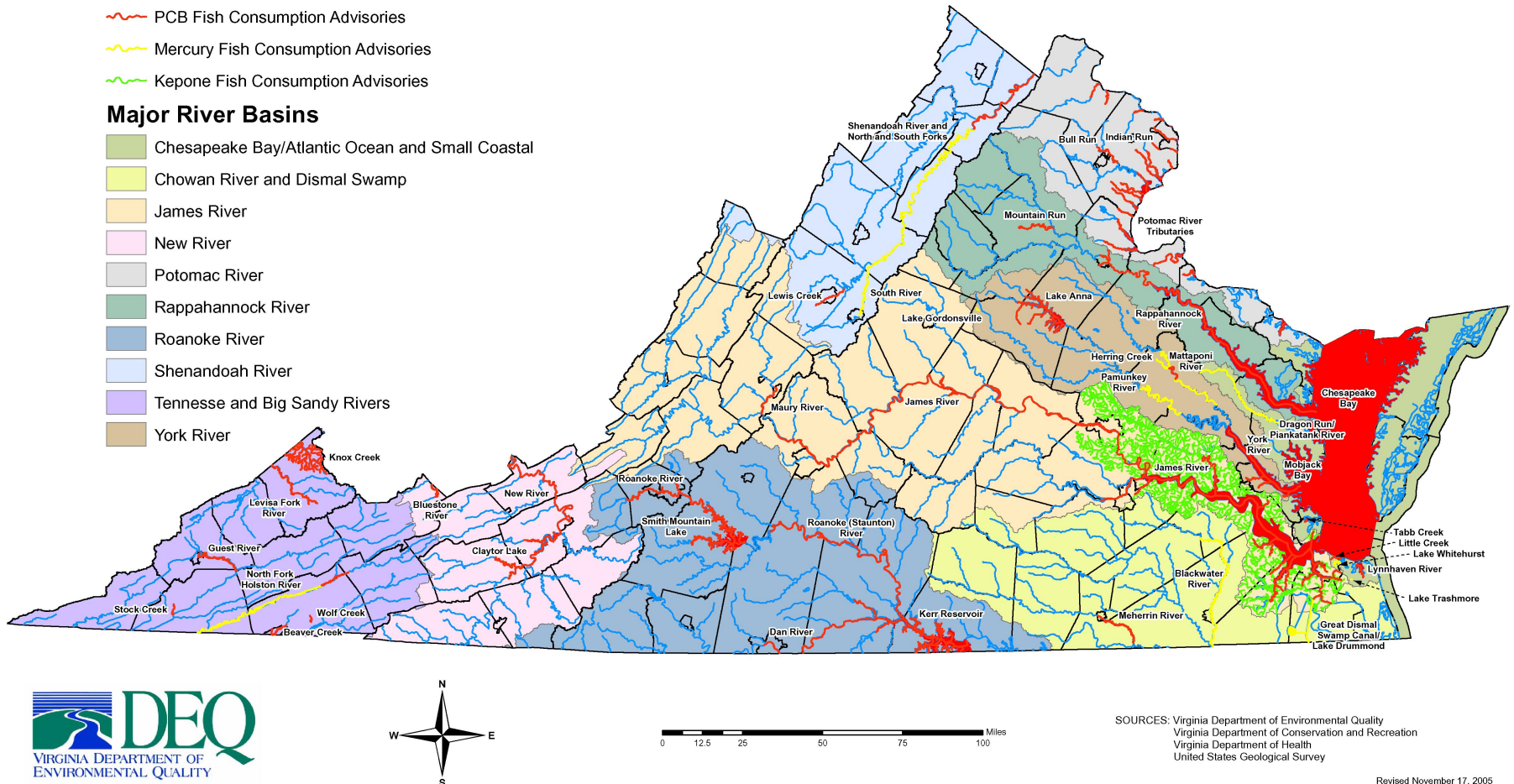
Trend Analysis Results

| % of all stations | BACTERIA | | TOTAL NITROGEN | | TOTAL PHOSPHORUS | | TOTAL SUSPENDED SOLIDS | |
|-------------------|-----------|-----------|----------------|-----------|------------------|-----------|------------------------|-----------|
| TIME BLOCK | degrading | improving | degrading | improving | degrading | improving | degrading | improving |
| 1985 to present | 1.1% | 6.6% | 6.1% | 16.6% | 1.6% | 19.0% | 2.6% | 11.2% |
| 1995 to present | 1.0% | 19.2% | 4.3% | 6.4% | 1.8% | 5.4% | 2.6% | 12.5% |

- 261 stations
- Considered effects (including flow) over two time intervals:
 - 1985 to 2004 Long-Term
 - 1995 to 2004 Mid-Term
- 80% of stations had no significant trends
- 20% of stations showed some water quality trends

Waters Under VDH Fish Consumption Advisories

Identified in 2006 305(b)/303(d) Water Quality Integrated Report



A complete list of fish advisories in Virginia can be found at

<http://www.vdh.virginia.gov/epi/publichealthtoxicology/fishingadvisories.asp>

Public Beaches

- 49 public beaches monitored by VDH
- Bacteria levels checked May – September
- May result in beach closures and swimming advisories
- 5 beaches impaired
 - Fairview (Potomac River)
 - Anderson's, Hilton, Huntington, King Lincoln Park (James River)

2006 Assessed Area

| Waterbody Type | Total | Assessed | Attained Use | Impaired |
|--------------------------|---------|----------|--------------|----------|
| Rivers (miles) | 50,356 | 14,265 | 5,263 | 9,002 |
| Lakes (acres) | 116,058 | 112,473 | 3,271 | 109,201 |
| Estuaries (sq. miles) | 2,425 | 2,382 | 170 | 2,212 |

Watersheds Assessed By DEQ (2002 - 2006)



18 Sept 2006

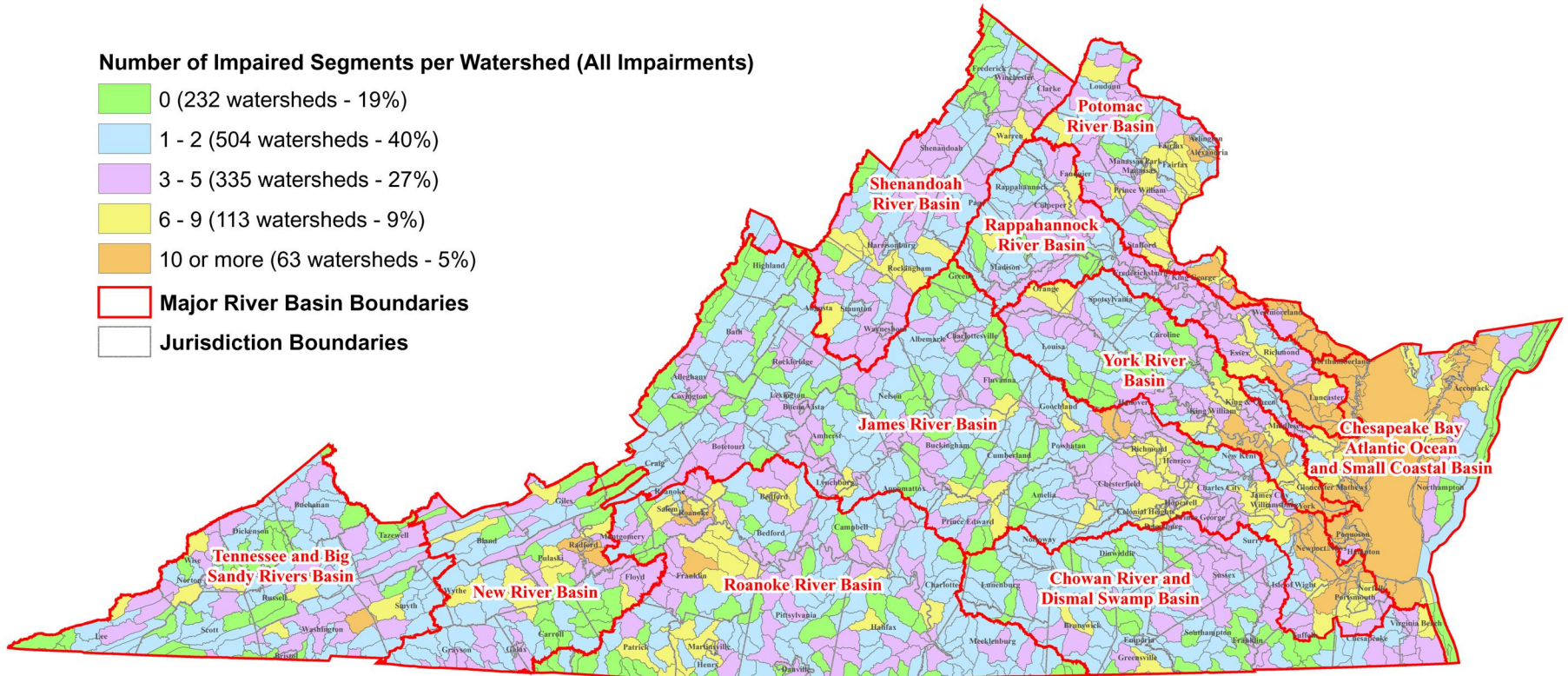
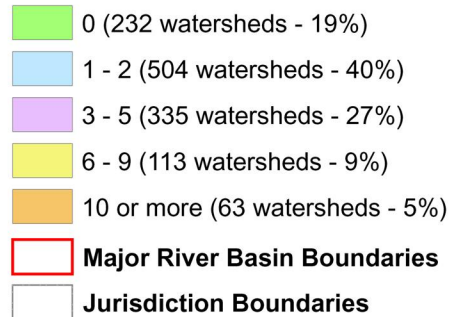
Impaired Area Identified Per Assessment Cycle by Waterbody Type

| Waterbody Type | 1996 | 1998 | 2002 | 2004 | 2006 |
|--|-------------|-------------|----------------------|-------------|-------------|
| Rivers 50,356 (miles) | 2,016 | 2,611 | 4,838 | 6,931 | 9,002 |
| Lakes 116,054 (acres) | 17,141 | 0 | 115,558 ¹ | 89,834 | 109,201 |
| Estuaries 2,425 (sq. miles) | 506 | 437 | 1,689 | 1,907 | 2,212 |

¹ Area included lakes shared by Virginia and North Carolina. 25,724 acres determined to be in North Carolina and removed from Virginia's 2004 total impaired acreage.

Distribution of Impaired* Waters In Virginia's Watersheds

Number of Impaired Segments per Watershed (All Impairments)

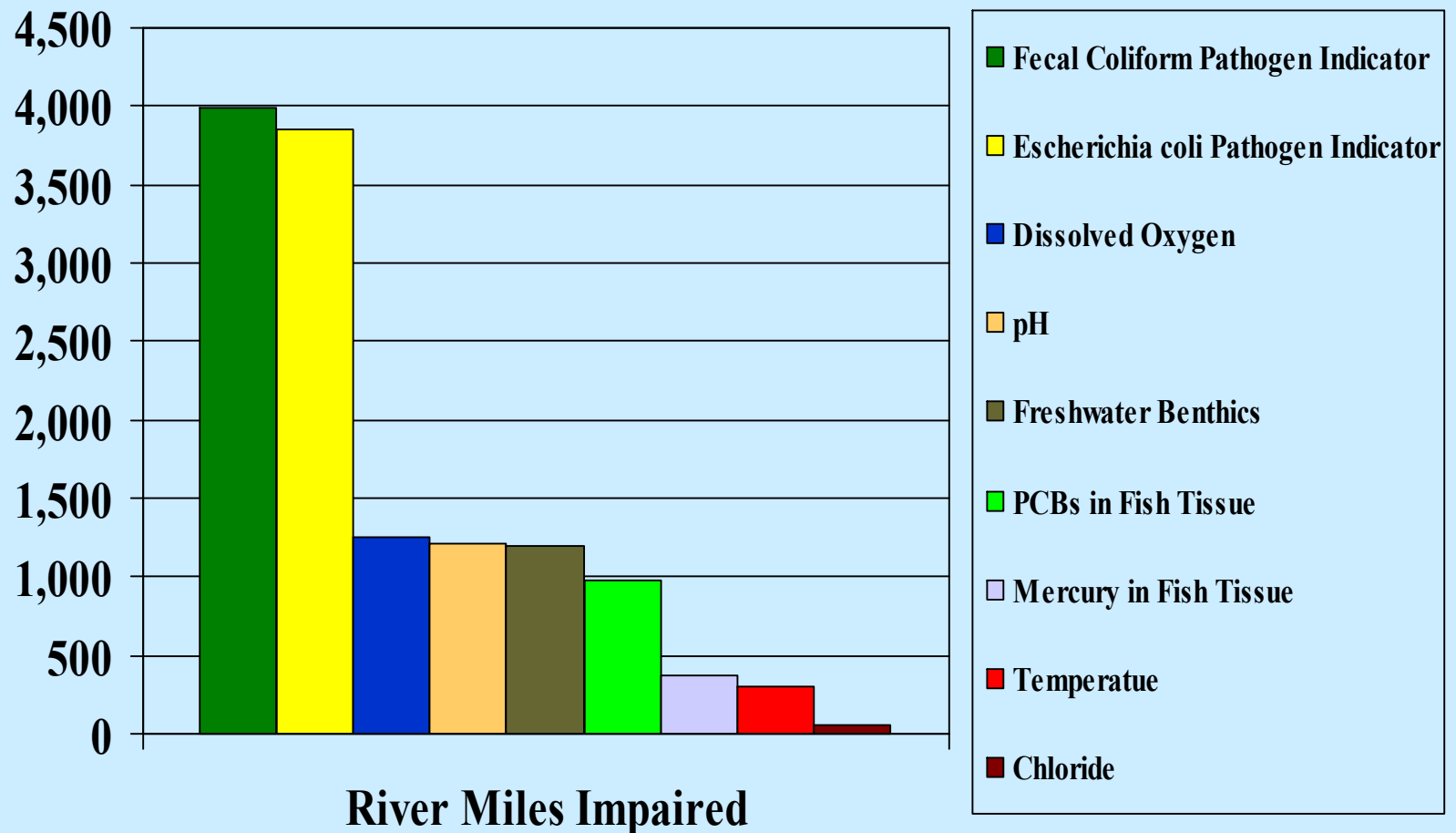


* Excludes Category 4B Waters

Sources: Virginia Department of Environmental Quality, 2006 Water Quality Assessment
Virginia Department of Conservation and Recreation

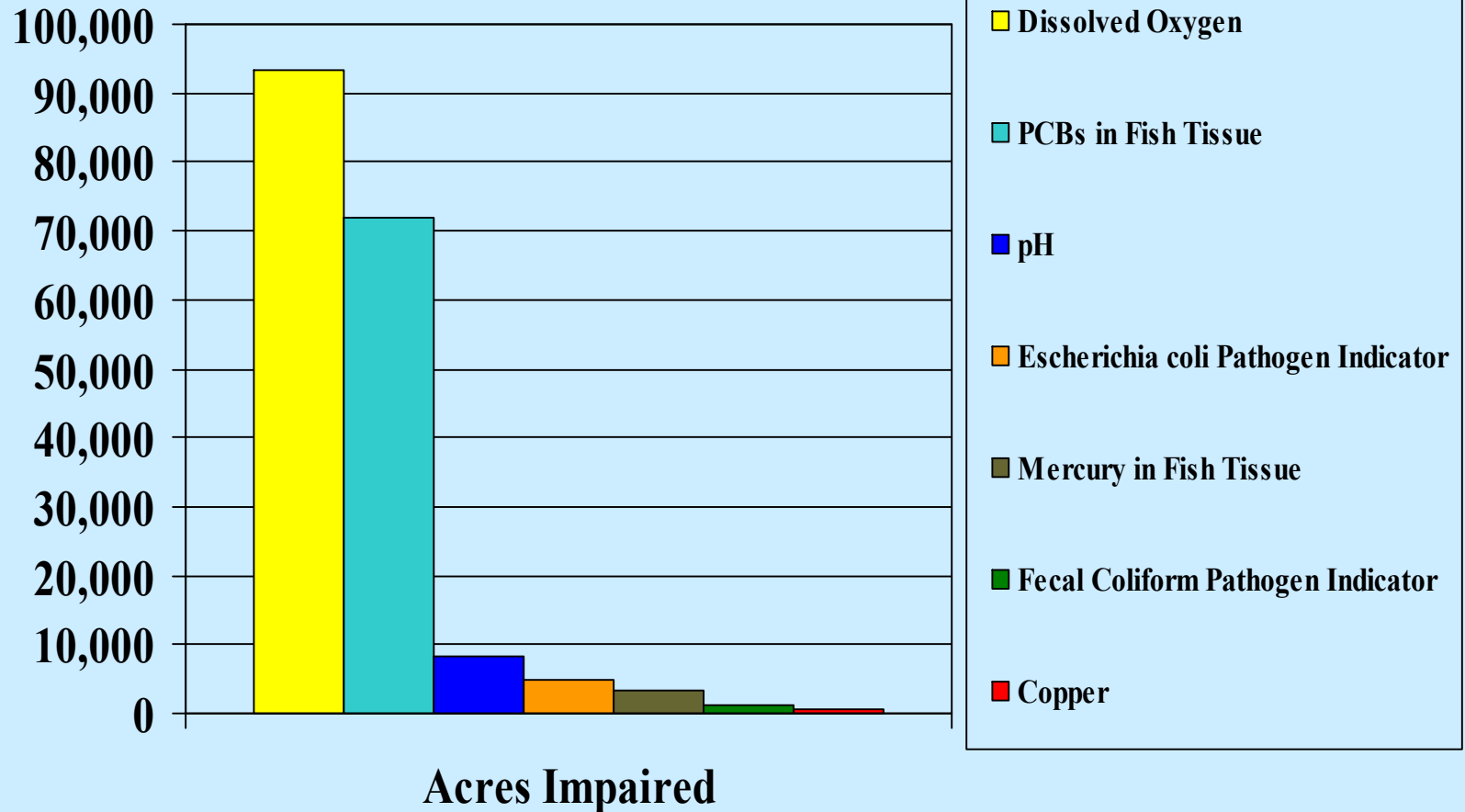
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Impairment Causes for Rivers



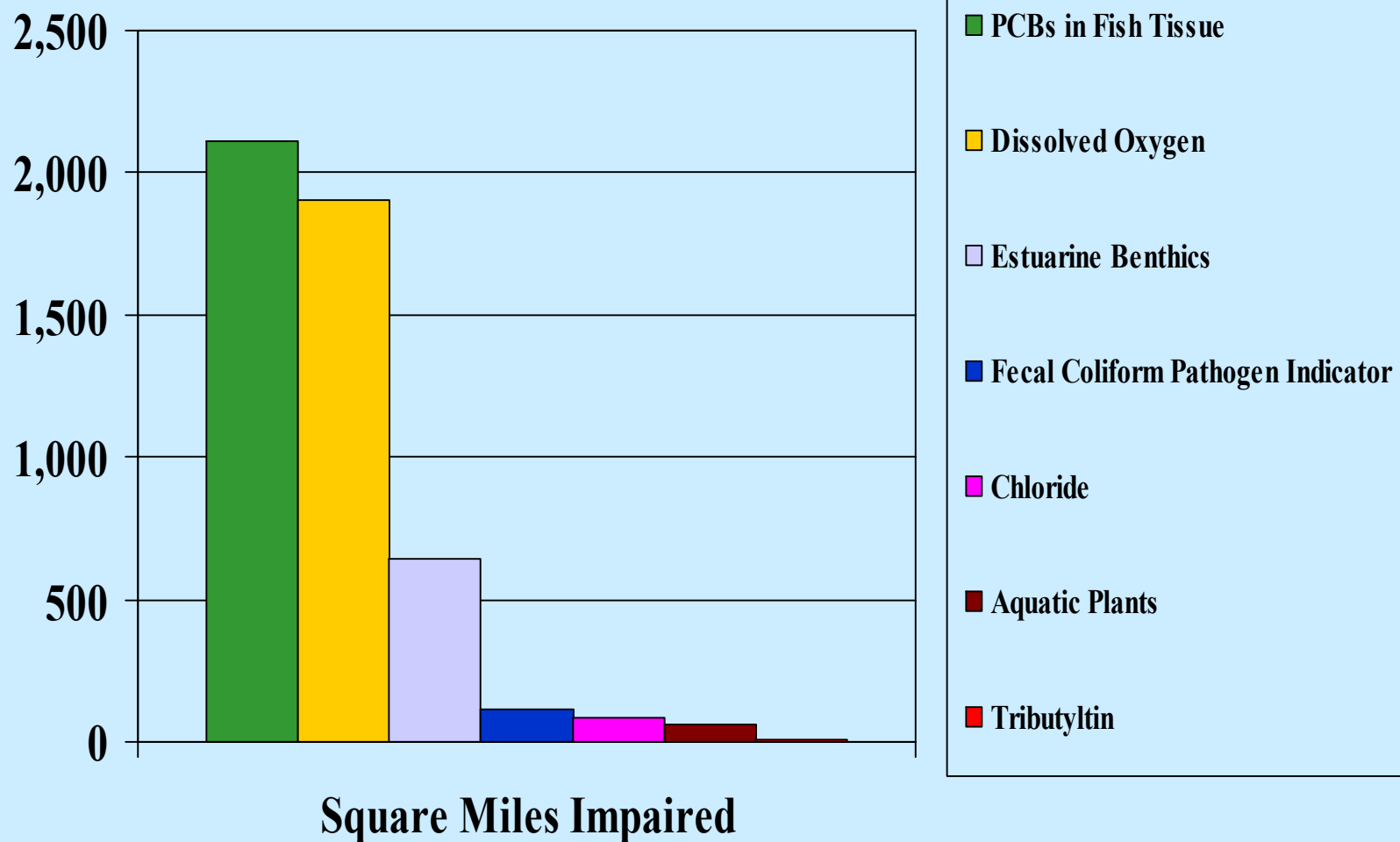
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Impairment Causes for Lakes



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Impairment Causes for Estuaries



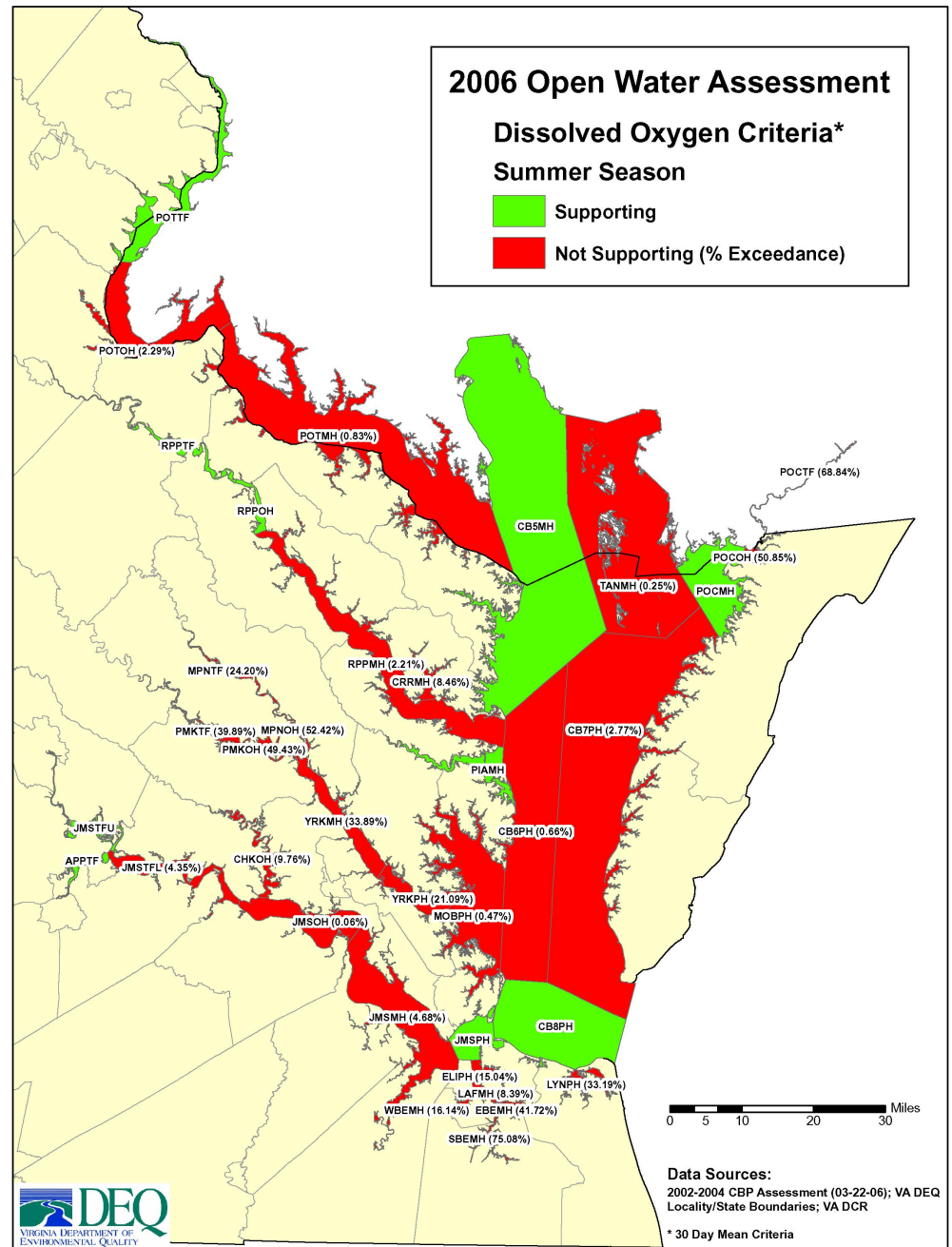
Designated Uses

| DESIGNATED USE | SUPPORT OF USE DEMONSTRATED BY |
|---|--|
| Aquatic Life Use (sub-divided in Chesapeake Bay and Tributaries) | Conventional Pollutants (Dissolved Oxygen, pH, Temp.); Nutrients and toxic contaminants found in sediments, toxics in water column; Biological evaluation |
| Fish Consumption Use | Advisories, limiting or restricting consumption (VDH); Exceeding state screening values for toxic pollutants found in fish tissue |
| Shellfish Consumption Use | Restricted harvesting and marketing of shellfish resources by Div of Shellfish Sanitation of VDH |
| Swimming Use | Conventional Pollutant (Fecal Coliform Bacteria, E. coli, enterococci) and/or beach closures issued by VDH |
| Public Water Supply Use | Closures or advisories by VDH; comparison of data to applicable public water supply standards |
| Wildlife Use | Aquatic life toxics criteria in water column |

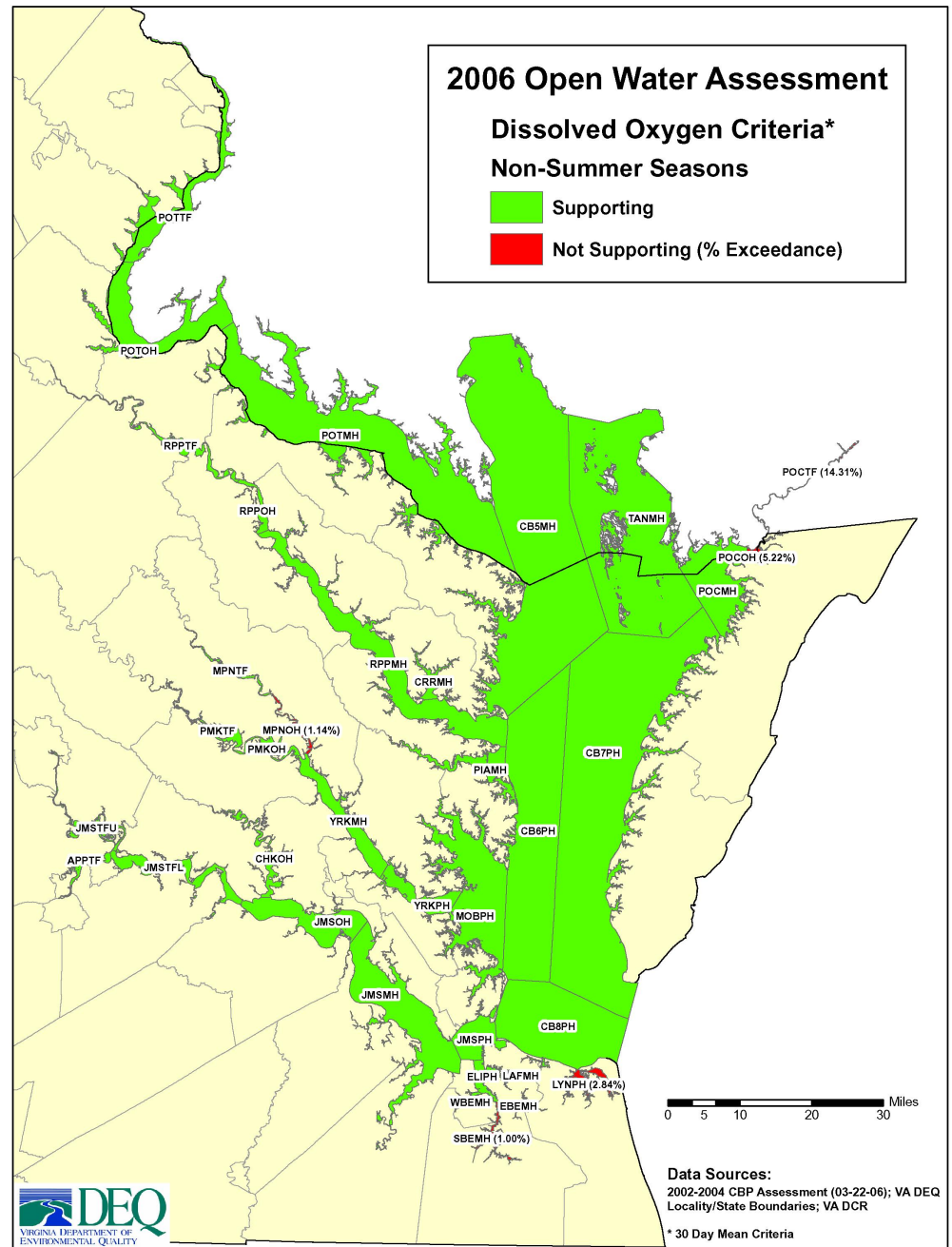
Chesapeake Bay - Aquatic Life Sub-uses

- Shallow Water - (SAV and Water Clarity)
- Spawning and Nursery (February - May)
 - Not assessed in 2006
- Open Water (Varies w/season)
- Deep Water (Summer Only)
- Deep Channel (Summer Only)
 - Not assessed in 2006

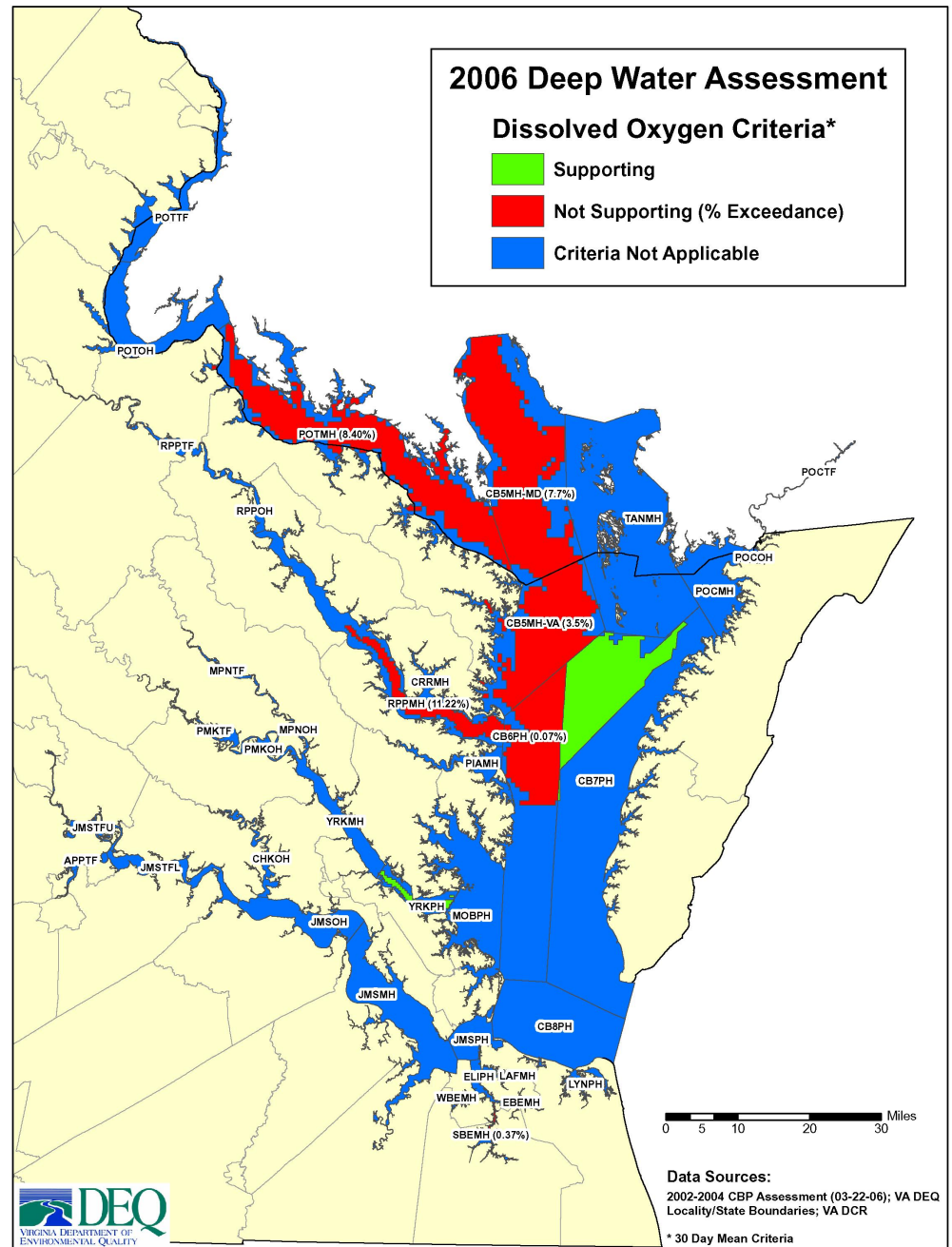
- Level of summer DO is better in the mainstem Bay than in some rivers
- Some sections of Bay and tidal fresh rivers meet DO criteria all year



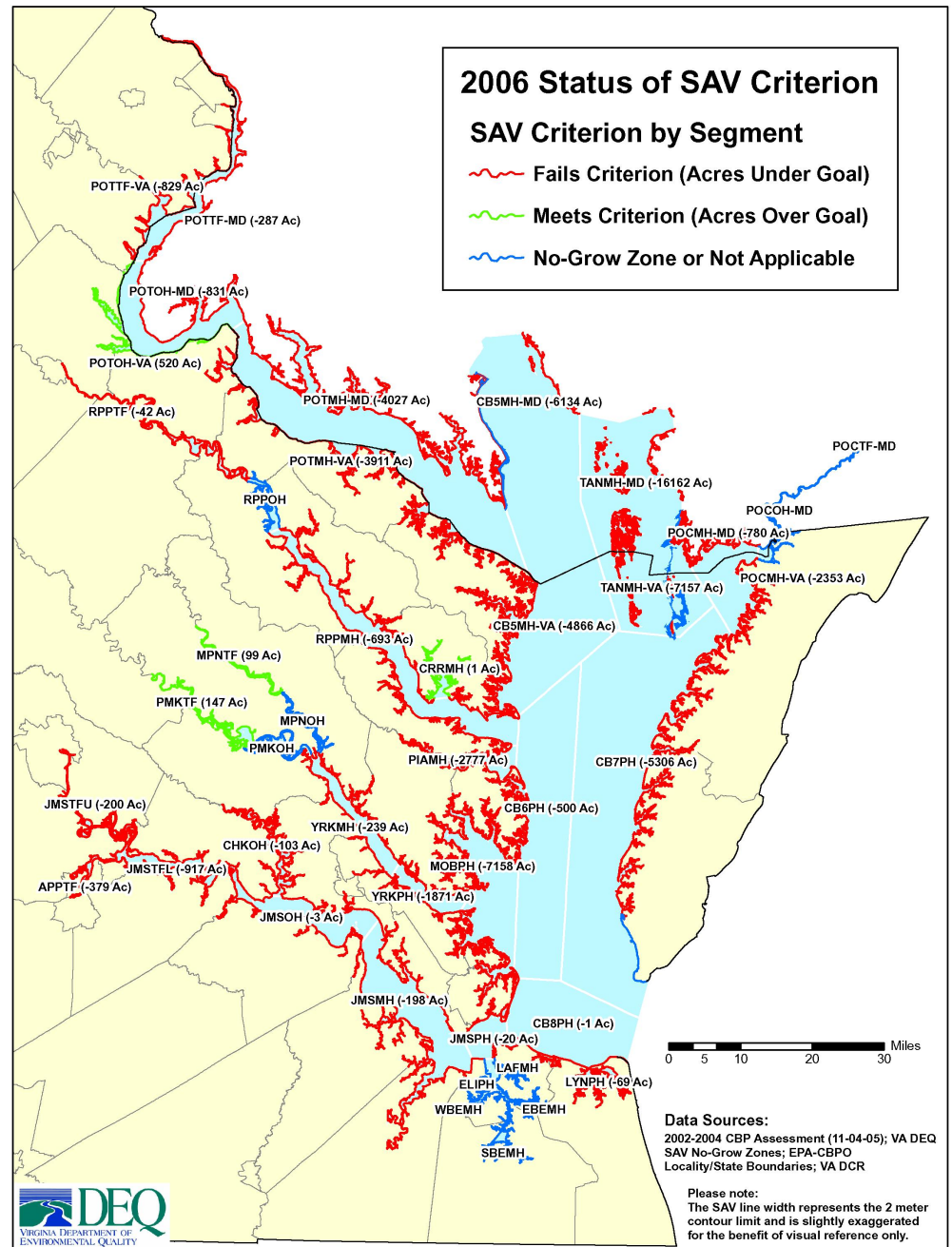
- In attainment everywhere except portions of Lynnhaven and Elizabeth Rivers
- Areas of failure have $< 3\%$ exceedance



- Use applies only in summers and only in very limited areas
- Mainstem Bay in Virginia $\leq 4\%$ exceedance



- SAV goal for Virginia is 77,463 acres
- 38,640 acres attained
- 38,823 acre shortfall in 2006



EPA Integrated List

EPA Assessment Categories (since 2004)

- Major Change To Assessment Approach
- 1 - Fully Support All Designated Uses
- 2 - Fully Support All Uses Assessed
- 3 - Insufficient Data
- 4 - Impaired (No TMDL Needed)
- 5 - Impaired (TMDL May Be Needed)
- Virginia added additional Subcategories in 2006 to help track TMDL implementation

New Impaired Water Listings

- 287 New (Category 5A) Impairments in 2006
 - Excluding both shellfish and natural impairments
 - 1,006 miles of Rivers (and Streams)
 - 27,401 acres of Lakes
 - 351 square miles of Estuaries
- 1712 total TMDLs to be developed

Delisting of Waters

- 69 Full Delistings Approved by EPA in 2006
 - Includes 38 (Category 5) Waters
 - 411 miles of Rivers
- 300 Total Full and 255 Partial Delistings through October 2006

2006 Legislation

HB 1150 – Chesapeake Bay and Virginia Waters Clean-up and Oversight Act

- Secretary of Natural Resources to develop a strategic plan by January 1, 2007 for cleanup of Virginia impaired waters
- The plan is to include:
 - Measurable, attainable objectives
 - Strategies and time frames
 - Funding and disbursement plans
 - Problem areas and risk mitigation strategies
 - Recommendations for legislative action
- Plan to be revised and updated as needed
- Semi-annual progress reports to General Assembly committees
- Meetings of committees to hear testimony or discuss specific initiatives requiring legislative action

Steps in TMDL Process

- Place Impaired Waters on 303(d) List due to Water Quality Standards violations
- Develop TMDL - Total Maximum Daily Load - for Impaired Waters - 381 through May 2006)
- Develop TMDL Implementation Plan
 - 13 completed for 36 waters; 10 more in progress
- Implement TMDL Plan -11 w/“BMPs installed”
- Remove Waters from 303(d) List when Water Quality Standards achieved

Extra Slides

Integrated List - VA Subcategories

- Category 1 - Fully Support All Uses
 - *Virginia 1A* - TMDL Developed, Attaining All Uses
- Category 2 - Fully Support All Uses Assessed
 - Virginia 2A - Support All Monitored Uses
 - Virginia 2B - Waters Of Concern But No Water Quality Standard Exists, Or A Screening Value Was Exceeded
 - *Virginia 2C* - TMDL Developed, Attaining Use For Which It Was Originally 303(d) Listed But Insufficient Data for Some Uses

Integrated List - VA Subcategories

- Category 3 - Insufficient Data
 - Virginia 3A - No Data Available
 - Virginia 3B - Data Available But Insufficient Quantity
 - Virginia 3C - Citizen Monitoring Indicates Problem
 - Waters Evaluated And Prioritized For Follow-Up Monitoring
 - 31 Citizen-Identified Waters Scheduled for DEQ Monitoring (in 2007)
 - Virginia 3D - Citizen Monitoring Indicates No Problems

Integrated List - VA Subcategories

- Category 4 - Impaired TMDL Not Needed
 - Virginia 4A - TMDL Developed and EPA Approved
 - Virginia 4B - Other Regulatory Requirements Will Assure Attainment In Near Future (e.g. NPDES)
 - Virginia 4C - Impairment Caused By Pollution
- Pollution - No Polluting Substance (e.g. flow)
- Pollutant - Polluting Substance (e.g. bacteria)

Integrated List - VA Subcategories

- Category 5 - Impaired, TMDL May Be Needed
 - Virginia 5A - Non-Shellfish (TMDL Required)
 - Virginia 5B - Shellfish (TMDL Required)
 - Virginia 5C - Naturally Impaired
 - Study needed to determine if wholly or partially impaired
 - Designated use and water quality standard may be changed
 - Virginia 5D - TMDLs Developed For Some Causes
Additional TMDL(s) Needed For Other Causes
 - Virginia 5E - Effluent Limited Waters With Compliance
Schedule After The Next Assessment Date
 - ***Virginia 5F*** - Delisting Approved, But The Water Remains
Impaired Due To Other Causes